

Hapco

**STREET
LIGHTING
BRACKETS**

HUBBARD ALUMINUM PRODUCTS COMPANY

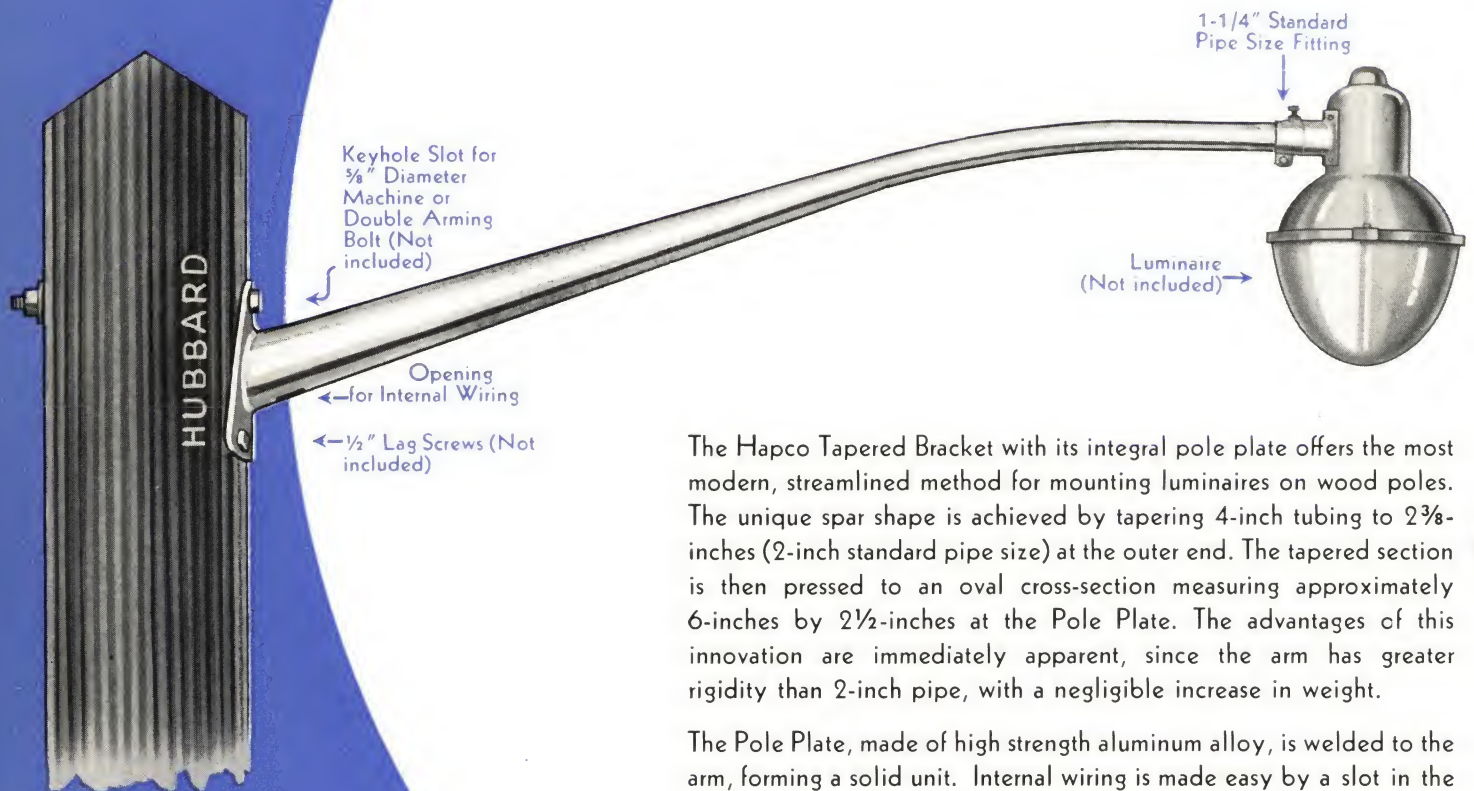
A Division of HUBBARD and COMPANY
6301 Butler Street • Pittsburgh, Pa.



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TAPERED TYPE BRACKET

ALUMINUM ALLOY



The Hapco Tapered Bracket with its integral pole plate offers the most modern, streamlined method for mounting luminaires on wood poles. The unique spar shape is achieved by tapering 4-inch tubing to 2 3/8-inches (2-inch standard pipe size) at the outer end. The tapered section is then pressed to an oval cross-section measuring approximately 6-inches by 2 1/2-inches at the Pole Plate. The advantages of this innovation are immediately apparent, since the arm has greater rigidity than 2-inch pipe, with a negligible increase in weight.

The Pole Plate, made of high strength aluminum alloy, is welded to the arm, forming a solid unit. Internal wiring is made easy by a slot in the bottom of the arm near the Pole Plate. The Plate has a keyhole slot at the top of sufficient size to pass over the head of a 5/8-inch machine bolt, a Hapco quick mounting feature, and two holes at the sides for 1/2-inch lag screws.

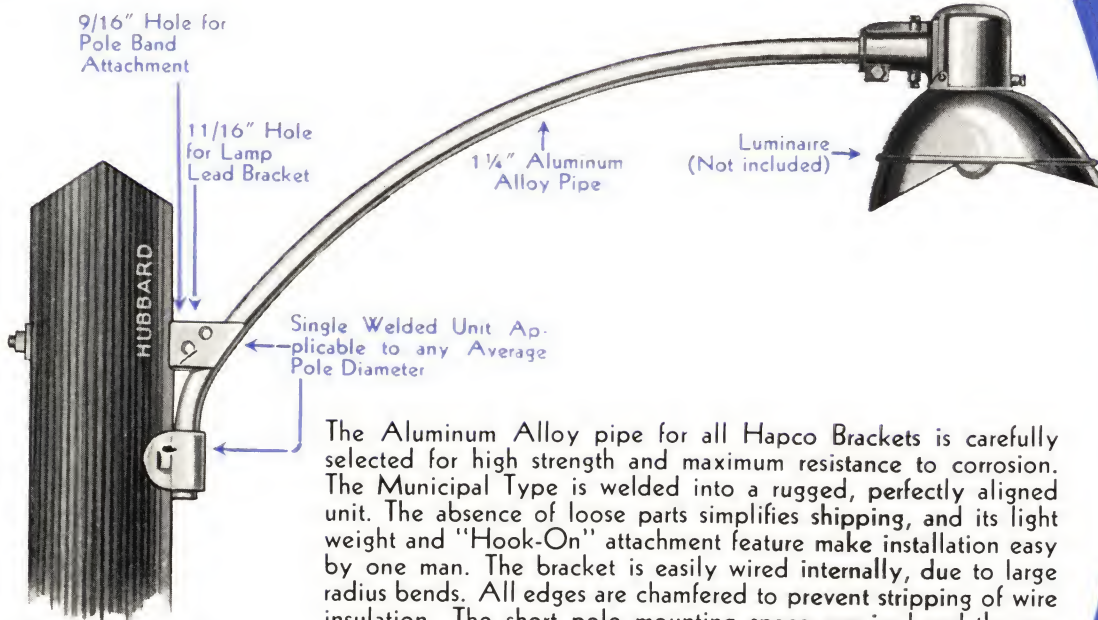
Standard numbers listed below are supplied with outer end reduced to 1 1/4-inch pipe size for slip fitter luminaires or 1 1/4-inch standard pipe threaded fittings. If 2-inch pipe end is desired, please specify.

Stock No.		Nominal Length of Arm—Feet	Nominal Pipe Size Inches (Tapered)	Rise—Inches, from Center of Pole Plate to Center of Pipe at Outer End—Approximate	Approximate Shipping Wt. Lbs., Each
Threaded End	Plain End				
HAL 4224	HAL 4224P	4	4 to 2	17	7.0
HAL 4225	HAL 4225P	5	4 to 2	17	8.5
HAL 4226	HAL 4226P	6	4 to 2	17	10.0
HAL 4228	HAL 4228P	8	4 to 2	17	14.5

MUNICIPAL TYPE BRACKET

ALUMINUM ALLOY

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Mounted on 3/4" Diam. Machine Bolt (Not included) and 1/2" Lag Screws (Not included)

The Aluminum Alloy pipe for all Hapco Brackets is carefully selected for high strength and maximum resistance to corrosion. The Municipal Type is welded into a rugged, perfectly aligned unit. The absence of loose parts simplifies shipping, and its light weight and "Hook-On" attachment feature make installation easy by one man. The bracket is easily wired internally, due to large radius bends. All edges are chamfered to prevent stripping of wire insulation. The short pole mounting space required and the up-sweep design permit maximum elevation of the luminaire. Specify plain or threaded ends as indicated by stock numbers in the table.

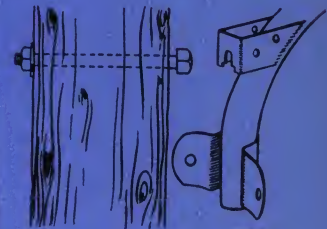
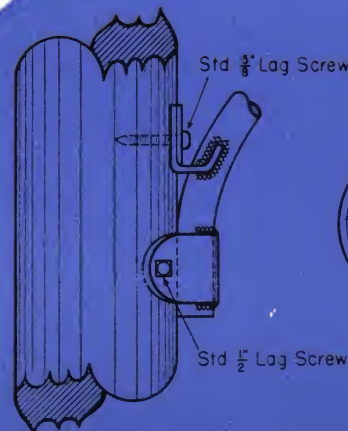
Stock No.		Nominal Length, Feet	Nominal Pipe Dia., Inches	Approximate Rise, Inches	Approximate Ship. Weight Lbs. Each
Threaded End	Plain End				
HAL 143A	HAL 143AP	3	1 1/4	16	4.5
HAL 144A	HAL 144AP	4	1 1/4	20	5.5
HAL 145A	HAL 145AP	5	1 1/4	24	6.5
HAL 146A	HAL 146AP	6	1 1/4	26	8.0

LAG SCREW TYPE

HAL 143B	HAL 143BP	3	1 1/4	16	4.25
HAL 144B	HAL 144BP	4	1 1/4	20	5.25

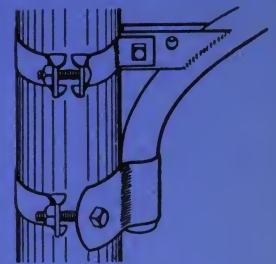
LAG SCREW TYPE

The Lag Screw Type Bracket differs from the Municipal Type only in the method of attachment to the pole. It is designed for use in locations where it may be undesirable to have a bolt projecting from the back of the pole. The design of the upper attachment plate provides wrench room for the final tightening of the 3/8-inch lag screw. Two 1/2-inch lag screws in the lower plate complete the installation. Ordering information is contained in the table above.



Exclusive Hapco "Keyhole" type of attachment (shown above) permits easy installation by one man.

The Pole Bolt is inserted and the nut started, leaving the head of the bolt projecting about 1-inch for easy hanging of the bracket. The bracket is hung, the nut tightened, and the lag screws inserted.



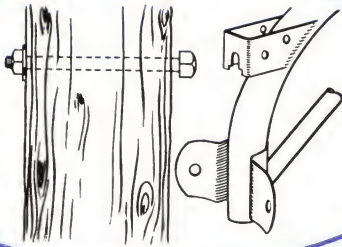
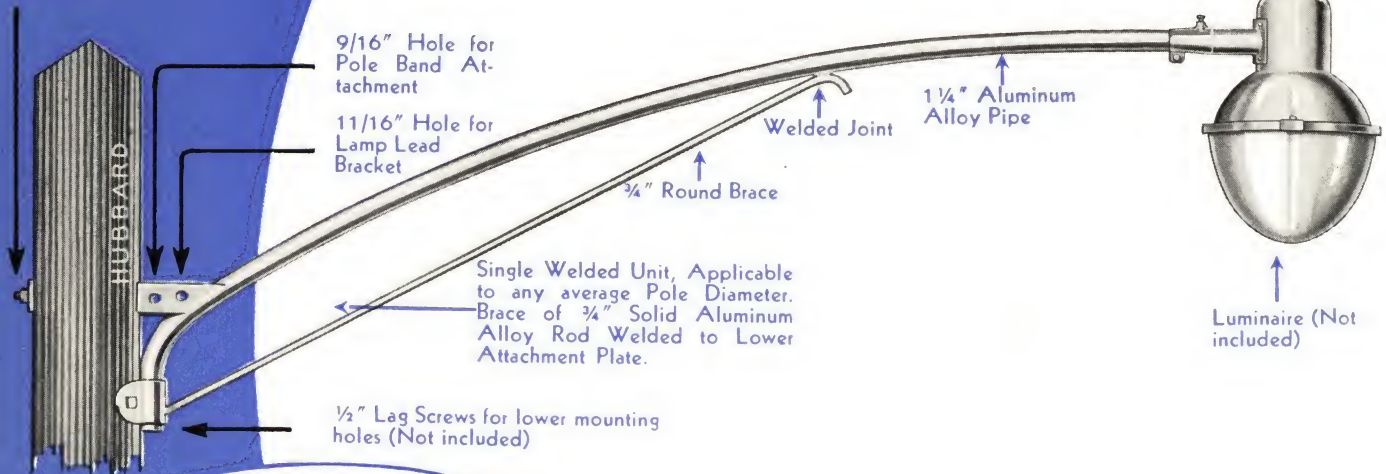
The same arm, with no change in design, may be mounted on metal poles. Bands are used as shown above for the top fastening. The lower attachment plate is drawn tight to the pole by angle bolts through the "ears" of the plate and the band. Bands and bolts may be ordered in sets, complete for each installation.

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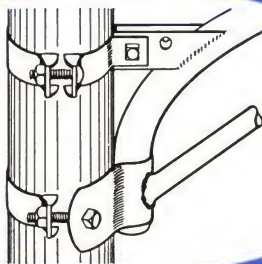
ROUND BRACE TYPE BRACKET

ALUMINUM ALLOY

$\frac{5}{8}$ " Diam.
Machine Bolt
(Not included)



The 6-foot bracket, which weighs only 11 pounds, or the 8-foot length weighing only 14 pounds, can easily be installed by one man. The Pole Bolt is first inserted, the "Keyhole" attachment is slipped over the head of the bolt, the nut is tightened, and the lag screws are inserted to complete the installation.



The same bracket may be mounted on metal poles by means of bands as shown in the illustration above. The installation is the same as for the Municipal Bracket, shown on page 3.

The Hapco Round Brace Type Bracket is formed from $1\frac{1}{4}$ -inch aluminum alloy pipe and reinforced with a $\frac{3}{4}$ -inch round rod-brace, which provides extra rigidity. The exclusive Hapco pole mounting feature is used. The bracket is mounted by means of a $\frac{5}{8}$ -inch mounting bolt and two $\frac{1}{2}$ -inch lag screws.

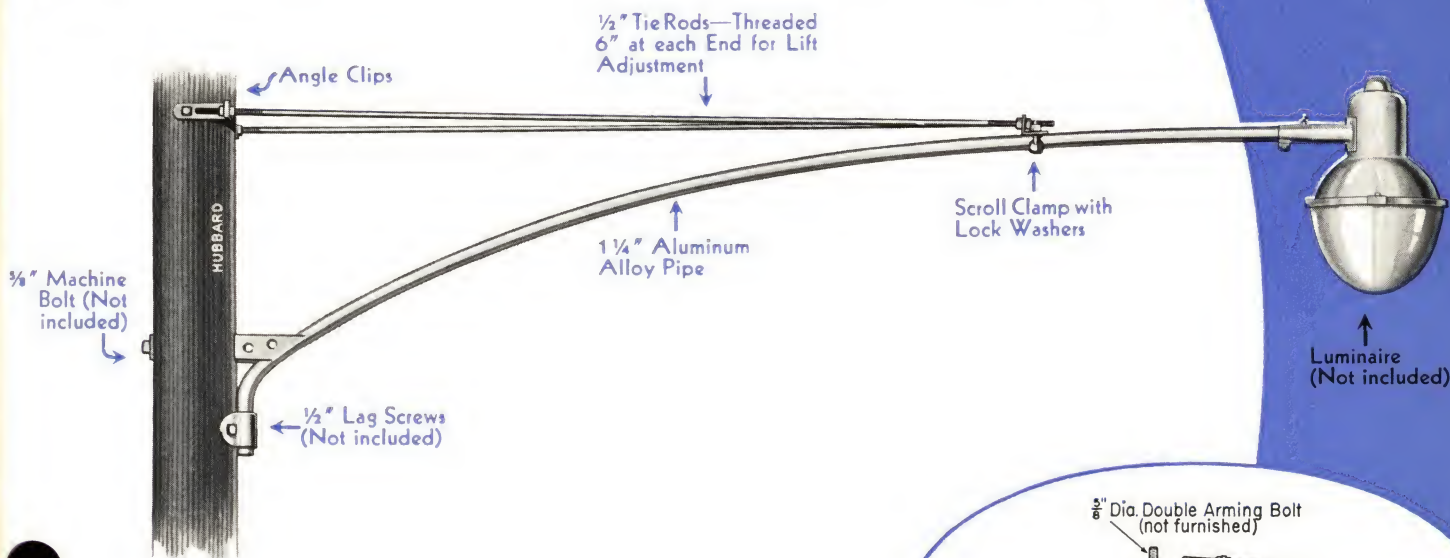
A unique feature of HAPCO brackets having this pole mounting design is that they can be installed on either wood or metal poles. Diagrams at the left show both types of mounting. Bands for metal pole mounting will be quoted on request.

Stock No.	Style of Bracket End	Nominal Length, Feet	Nominal Pipe Dia., Inches	Approx. Rise Inches	Approx. Shipping Weight, Lbs., Each
HAL 1426	Threaded	6	$1\frac{1}{4}$	26	11
HAL 1426P	Plain	6	$1\frac{1}{4}$	26	11
HAL 1428	Threaded	8	$1\frac{1}{4}$	29	14
HAL 1428P	Plain	8	$1\frac{1}{4}$	29	14

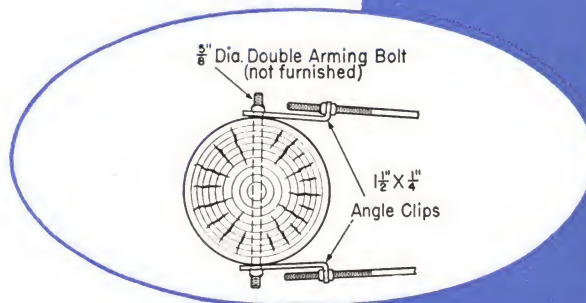
TIE-ROD TYPE MAST-ARM

ALUMINUM ALLOY

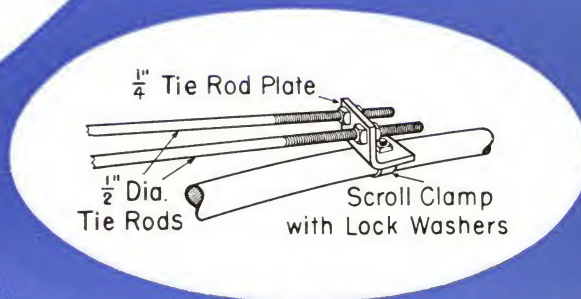
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The Hapco Aluminum Alloy Mast Arm illustrated above is desirable for locations where it is necessary to place luminaires at greater distances from the pole. Installation of this bracket is accomplished by the "Hook-On" method shown on preceding pages, plus two adjustable tie rods which, by means of clip angles, are attached to the pole, employing a $\frac{5}{8}$ -inch Crossarm or Double Arming Bolt as shown at the right. The $\frac{1}{2}$ -inch diameter tie rods reduce side sway to a minimum and provide a rigid assembly. The graceful, large radius bends permit the easy insertion of lighting leads. Although this series of brackets is designed especially for internally wired luminaires, they can also be used for external wiring by the addition of spreader arms which will be quoted upon request.



TOP VIEW OF TIE ROD FASTENING



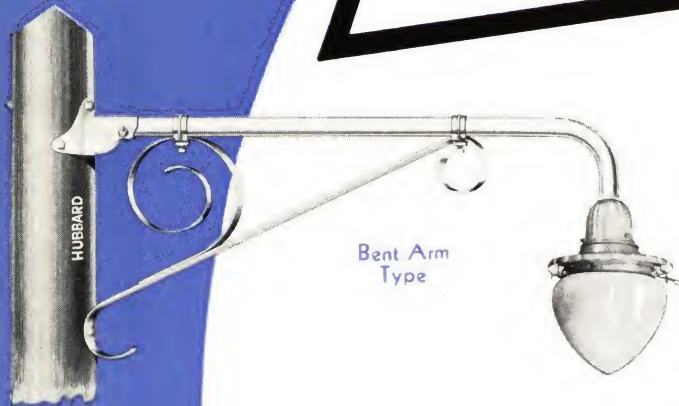
ENLARGED VIEW OF
TIE ROD FASTENING AT OUTER END
(Note Length of Thread for Leveling)

Stock No.		Nominal Length, Feet	Nominal Pipe Dia., Inches	Approx. Rise, Inches	Approx. Ship. Weight Lbs., Ea.
Threaded End	Plain End				
HAL 14108	HAL 14108P	8	1 1/4	28 3/4	15
HAL 14110	HAL 14110P	10	1 1/4	28 3/4	17
HAL 14112	HAL 14112P	12	1 1/4	28 3/4	19
HAL 14114	HAL 14114P	14	1 1/4	28 3/4	21

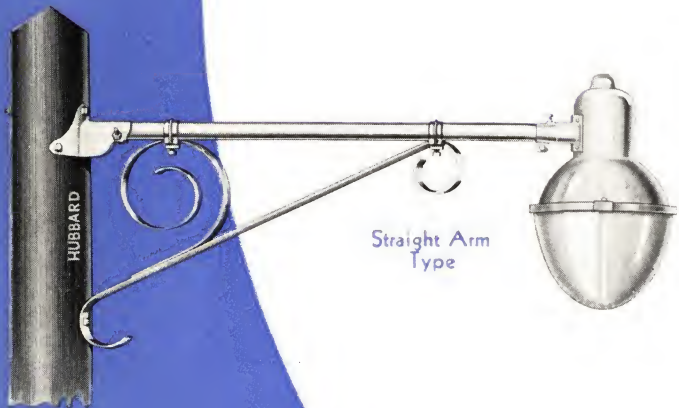
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STREET HOOD BRACKETS

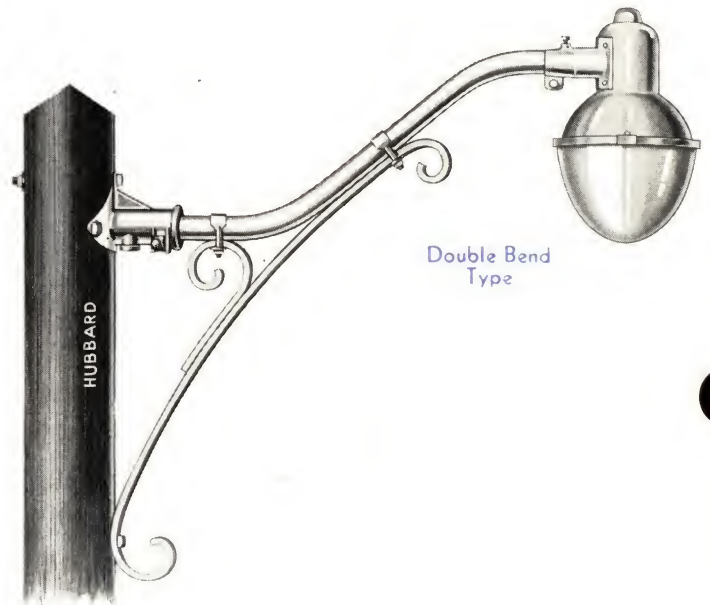
ALUMINUM ALLOY



Bent Arm Type



Straight Arm Type



Double Bend Type

Three popular styles of Hapco Street Hood Brackets are shown. They are graceful in design, light in weight, traditional in appearance, and highly corrosion resistant. They are formed from 1 1/4-inch aluminum alloy pipe and mounted to the pole by means of high strength pole plates. The brackets may be combined with a wide variety of top or bottom scrolls, providing additional strength as well as ornamentation to the assembly. While the brackets shown represent the most popular standard numbers, we invite your inquiries for other designs to suit individual requirements.

Stock No.		Extension from Pole, Feet	Nominal Dia. Pipe, Inches	Pipe Thread Attachment Size Inches	Approximate Shipping Wt., Lbs., Each
Threaded End	Plain End				
DOUBLE BEND					
HAL 2144	HAL 2144P	4	1 1/4	1 1/4	9
HAL 2146	HAL 2146P	6	1 1/4	1 1/4	12
HAL 2148	HAL 2148P	8	1 1/4	1 1/4	16
BENT ARM TYPE					
HAL 414	HAL 414P	4	1 1/4	1 1/4	9
HAL 416	HAL 416P	6	1 1/4	1 1/4	12
HAL 418	HAL 418P	8	1 1/4	1 1/4	16
STRAIGHT ARM TYPE					
HAL 404	HAL 404P	4	1 1/4	1 1/4	8.5
HAL 406	HAL 406P	6	1 1/4	1 1/4	11.5
HAL 408	HAL 408P	8	1 1/4	1 1/4	15.5

WHY THE TREND IS TOWARD ALUMINUM

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Corrosion Resistance—The inherent corrosion resistant properties of aluminum alloys used in Hapco brackets make them ideal for installation in any location. They are especially suited to areas of intense atmospheric contamination, such as railroad yards, oil refineries, and heavy industrial sites. Most sulphur compounds encountered in these areas have very little effect upon the aluminum alloys used in our brackets. In addition, Hapco brackets are highly resistant to seacoast corrosion and they are recommended for use in these areas. Hapco aluminum alloy brackets are installed without painting and require a minimum of maintenance over their lifetime.

If you should desire a more detailed discussion of the resistance of aluminum alloys to atmospheric exposure, we will be very happy to supply this information along with data supported by actual field tests.

Lightweight—In general, any given volume of aluminum has only one-third the weight of the same steel shape; hence the brackets shown in this bulletin weigh only one-third as much as an equivalent steel design. For example, the HAL 146A bracket weighs approximately 8-pounds each; whereas the comparable steel bracket weighs about 22-pounds. This lightweight feature means great savings in the cost of warehousing, handling, and installation of Hapco brackets, as compared with conventional steel brackets. Many utility companies and municipalities claim this difference in weight saves enough handling and installation charges to more than offset the small price differential between aluminum and steel.

Strength—The light weight of aluminum alloys does not mean that they are lacking in adequate strength. All Hapco brackets are designed to meet all known strength specifications for street lighting brackets, and they are tested regularly as a part of manufacturing procedure, to assure the user a uniform, reliable product. Test data on all bracket designs are available and will be furnished upon request.

Alloy Selection—In order to attain a most desirable combination of high strength and corrosion resistance, the greatest care is taken in the selection of aluminum alloys used in the manufacture of Hapco brackets. In general, the magnesium silicide group of alloys has been selected since they possess the best corrosion resistant characteristics for this particular aluminum application. This group includes alloy 61S, 63S, and 52S which are used for parts made from wrought products, and alloy 356 for cast products. Alloy 220 in which magnesium is the sole alloy constituent, is also used for certain cast parts which require high strength and ductility. Further consideration is also given to the proper temper for each part, in order that it will measure up to strength requirements.

Manufacturing Facilities—It is well known that aluminum fabrication requires special techniques and "know-how", in order to assure a product of uniform quality. Hapco has these facilities. For example, all aluminum welding is done by the Aircomatic Process which is the latest development in the field of inert gas shielded arc welding. Other specialized equipment includes a precipitation heat treatment oven which

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WHY THE TREND IS TOWARD ALUMINUM

is capable of receiving aluminum parts or shapes up to 44-feet in length. This oven has a temperature tolerance of plus or minus 5 degrees, and has a range of temperatures which will handle artificial aging of any commercially available aluminum alloy.

Appearance—The pleasing soft grey finish of aluminum is acclaimed by designers for many architectural applications, such as window frames, doors, spandrels, etc. It is especially desirable for street lighting construction since it blends with

any background. The modern streamline design of Hapco brackets enhances the appearance of the latest types of luminaires.

In order to match existing installations, many municipalities prefer to have brackets of uniform design. If the brackets shown in the preceding pages do not fit in with individual settings, we invite your inquiries with the assurance that Hapco is equipped to engineer special designs to your satisfaction.

"The Hapco Story"

Ever since the discovery of aluminum and its first introduction as a semi-precious metal, it has shown an astonishing increase in general use as more and more applications have been found for its unique qualities. However, it has only been in the last decade that the great advance in development of aluminum alloys has provided the structural and architectural fields with an unusually versatile material.

The demand in the electrical industry has become so great

that Hubbard and Company, with a history of more than 100 years experience in manufacturing, has formed a new division which is known as "Hubbard Aluminum Products Company," whose products are identified by the brand name "Hapco." Housed in a new building, and equipped with the latest devices for fabrication from aluminum alloys, as described in the preceding pages, "Hapco" is now able to offer the electrical industry the assurance of high quality products, fully in keeping with the recognized Hubbard tradition.

EXTERIOR VIEW OF THE NEW HUBBARD ALUMINUM PRODUCTS COMPANY PLANT



PARTIAL INTERIOR VIEW OF THE HAPCO PLANT SHOWING STOCKS ON HAND READY FOR IMMEDIATE SHIPMENT, AND UPSWEEP BRACKETS IN VARIOUS STAGES OF MANUFACTURE



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WHY THE TREND IS TOWARD ALUMINUM

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From the collection of:

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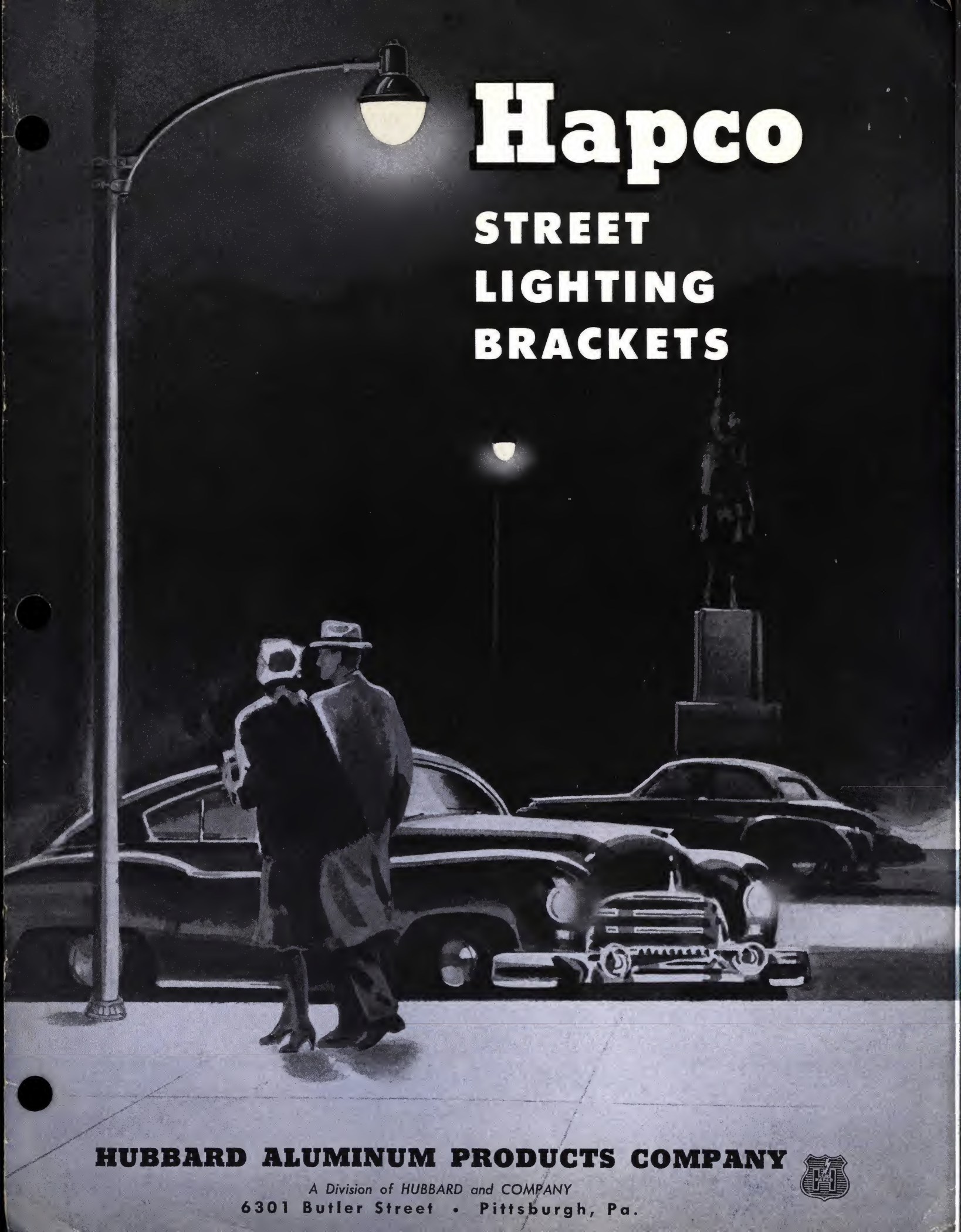
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EXTERIOR VIEW OF





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**STREET
LIGHTING
BRACKETS**

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